# Preliminary Assessment

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Port of Portland Terminal 2 3556 NW Front Avenue Portland, Oregon 97210

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Prepared by: Port of Portland



# **General Site Data**

Site Name and Address: Port of Portland

Terminal 2

3556 NW Front Avenue Portland, Oregon 97210

Current Owner: Port of Portland

P.O. Box 3529

Portland, Oregon 97208

Contact: Denise Ragland, Terminal Manager

Phone: (503) 944-7206

Current Operator: Stevedoring Services of America

3556 NW Front Avenue Portland, Oregon 97210 Contact: Sharon Stahlsberg Phone: (503) 243-3218

Legal Description: Section 28, Township 1 North, Range 1 East.

Directions to site: Terminal 2 is located on the west bank of the

Willamette River approximately 1 mile south of the

downtown Portland core area.

# 1.0 Introduction

This report presents the results of a Preliminary Assessment (PA) for the Port of Portland Terminal 2 site located in Portland, Oregon. The Port of Portland conducted this PA at the request of the Oregon Department of Environmental Quality's (DEQ) Waste Management and Cleanup Division. As part of the Portland Harbor Sediment project, the DEQ has either conducted PA's or instructed landowners/potentially responsible parties to conduct PA's to determine the potential level of impact that facilities have on the sediments of the Willamette River.

This PA is being conducted as part of the Portland Harbor Sediment project and subsequent individual site investigations being conducted by DEQ to determine all potential sources of sediment contamination in the Willamette River. The report is designed to provide DEQ with the history of this site based on chemical and waste handling practices and to evaluate potential exposure pathways (surface water, air, groundwater and direct contact) for chemicals that may have been released and potentially impacted Willamette River sediments from facility operations.

# 2.0 Background

#### 2.1 Site Description

Terminal 2 is a 49-acre general cargo/container facility presently managed by Stevedoring Services of America (SSA) (see Site Map in Attachment I). The facility is equipped with on-dock rail which allows direct rail-to-ship transfer, four warehouses covering almost 7 acres, two berths with two cranes for regular ship calls, one berth for roll on - roll off operations, and a low-level barge dock with one crane. There are six truck check-in lanes and a 50-ton capacity truck scale at the facility. The facility has access either directly from Front Avenue or via I-405, which has an exit at the entrance to the facility. The facility is completely fenced and has on dock security during gate and ship operations.

The major customers at Terminal 2 are Australia/New Zealand Direct Line, Hawaiian Marine Lines, International Marine Transport Line, Italia/d'Amico Line, Jebsens Bulk Pool, SafBank, Star Shipping, SPP/United Yugoslav Line, Toko Line, and Tokai Line carrying mainly lumber, plywood, pulp, and steel cargoes.

The surface water at Terminal 2 is collected by a series of catch basins and is directly discharged to the Willamette River through two outfalls. One catch basin network at Terminal 2 drains the south end of the terminal through BC54PP. The north end of the terminal is drained through a catch basin network system through BC50PP. Attachment A contains a map showing the storm water collection system at Terminal 2.

# 2.2 Ownership and Operational History

In the late 1800s, the estimated location of the ordinary low water line at what is now Terminal 2 was located along NW Front Avenue. Between the late 1800s and 1926, filling activities resulted in shifting the low water line 200 to 800 feet north of NW Front Avenue (see Figure 1 in Attachment I).

Terminal 2 became a public marine terminal after World War II. The Commission of Public Docks acquired the Terminal 2 property in two large parcels at separate times [1, 10]. The first parcel was the 37-acre southern portion of the facility acquired from the U.S. War Assets Administration in 1949 (see Figure 2 in Attachment I). This property was originally part of the Willamette Iron and Steel Company (WISCO) shipyard. The WISCO shipyard included facilities located on property southeast of what is now Terminal 2 and facilities, including the Oceanic Terminal, located on what is now the Terminal 2 property. Combined, these structures and facilities provided a complete shipyard for launching and outfitting steel ships. Many of the manufacturing operations associated with the shipyard were located on the property southwest of what is now Terminal 2 (see Figure 3 in Attachment I). Specifically, these facilities included outfitting operations, a sheet metal fabrication shed, a cable storage building, a machine shop, a paint shop, a coppersmith shop, and the main industrial building. Facilities located on what is now the Terminal 2 property consisted of three shipways with four

attendant craneways located at the southern (upstream) end of the property. To the northwest (downstream) of the shipways were a series of buildings that housed the materials office, a pickling operation, support utilities, furnace building, and a pipe shop. Further to the northwest (downstream) were two outfitting docks and a dry dock basin. The dry dock basin was approximately 120 feet wide and 550 feet long and 50 feet deep. A 15,000-ton floating dry dock was planned for installation but was never installed. Southwest of the shipways and outfitting docks were a series of buildings used for support utilities, support services, and administrative services. Some of the facilities associated with the WISCO shipyards can be seen in a 1956 aerial photograph for the area (see Attachment B).

The downstream 21 acres were purchased by the Commission of Public Docks from West Coast Terminal Company in 1953 to assure rail access to the entire terminal. This property was known as the Oceanic Terminal and consisted of a massive, U-shaped warehouse and cold storage facility and three ship berths. The Oceanic Terminal was constructed in 1927. The Oceanic Terminal site was purchased from the North Pacific Lumber Company in 1919 by a private real estate investment syndicate. The site was unfilled, waterfront land lying at the western foot of Front Avenue. Port of Portland plans to straighten the Willamette River by dredging the west channel of the Willamette River at Swan Island during the 1920s made this site an ideal location for the placement of dredged materials. Oceanic Terminals property was built on fill hydraulically moved from adjacent slips. During the 1930s, Oceanic Terminal was used to export Oregon agricultural and manufactured wood products.

Modernization of the WISCO portion of the property became possible with the passage of a \$12.5 million general obligation bond measure in 1968. Modernization and rehabilitation of the Oceanic Terminal facility became possible with the approval of a \$40 million general obligation bond measure in 1984.

The Port assumed ownership of Terminal 2 after its merger with the Commission of Public Docks on January 1, 1971.

Key aspects of the history of acquisition and reconstruction of Terminal 2 are as follows:

- 1949 Purchased WISCO property from U.S. War Assets Administration (see 1956 and 1964 aerial photographs in Attachment B).
- 1953 Purchased 21 acres from West Coast Terminal Company (Oceanic Terminal).
- 1968 Approved \$12.5 million general obligation bond measure.
- Renovated WISCO property and filled approximately 3 acres of submerged land (compare 1975 aerial photographs in Attachment 2).
- 1969 Constructed Warehouse 205 of metal siding on top of 7-foot-high concrete walls (see 1975 aerial photograph).
- 1969 Constructed Administration Building attached to Warehouse 205 as a three-story building (see 1975 aerial photograph). The top two floors were removed in 1996
- 1972 Constructed Straddle Carrier Maintenance Building which was removed in 1998 (see 1975 aerial photograph).

1980 Constructed Gearlocker Building (see 1983 aerial photograph).

1981 Constructed Warehouse 206 (see 1983 aerial photograph).

1988 Constructed Warehouses 203 and 204 (see 1989 aerial photograph).

1988 Constructed the Administration Building. The building has three floors. Level 1 is designed as the truck check-in facility; Level 2 houses the HVAC system; and Level 3 is divided into offices presently leased to SSA, Hawaiian Marine Lines, and International Marine Transport (see 1989 aerial photograph).

1988 Constructed Berth 204 with 240 feet of low-level dock for ro-ro operations (see 1989 aerial photograph).

1988 Constructed Berth 203 as a low-level dock for barges (see 1989 aerial photograph). Moved the 36-ton Whirley crane from Terminal 1.

Filled approximately 11.85 acres of submerged land and adjusted the harbor line (see 1989 aerial photograph).

1989 Constructed the gearlocker storage building

1990 Purchased an 85-ton, straight-line container and general-purpose crane from Hyundai.

Operations at Terminal 2 include cargo handling, storage, and equipment maintenance. The equipment maintenance is all conducted by SSA and includes work on passenger vehicles, forklifts, yard vehicles, toploaders, miscellaneous equipment and motors related to facility operations and fueling of the equipment. All maintenance is conducted in or near the gearlocker building (see Site Map in Attachment I). All waste generated in this operation is disposed of or recycled offsite. A used oil tank is located inside the gearlocker building. To prevent residual oil from getting into the storm sewer system SSA has installed filter boots on catch basins located in the area that drains the pavement surrounding the gearlocker. All fueling is conducted from two above ground storage tanks (ASTs) (gas and diesel) on a designated concrete fueling pad that is connected to an oil/water separator prior to discharge to the sanitary sewer system. The fueling tanks and fueling area was constructed in 1998. Prior to 1998, fueling was conducted from underground storage tanks (USTs) on a concrete pad just south of the gearlocker building. Stevedoring Services of America (SSA) is the tenant of Terminal 2. SSA is responsible for their operational permits and implementation of a spill response plan and a storm water pollution control plan.

Historically, products handled at Terminal 2 have included items such as lumber, plywood, pulp, and steel [1]. Table 1 presents readily available cargo statistics for Terminal 2 between 1978 and 1999.

Table 1. Terminal 2 Cargo Statistics (tons) [1]

	Breakbulk				Ctr.	Auto	Grain	Mineral
Year	Steel	Lumber	Logs	Other	Tons	Tons	Tons	Bulk
1978	0	36,178	6,346	64,525	129,652	0	0	. 0
1979	0	23,240	34,696	111,977	146,468	0	0	1,019
1980	.0	76,884	30,046	119,945	119,389	0	0	0
1981	7,385	58,681	1,563	84,067	60,867	0	0	. 0
1982	21,996	39,817	2,355	48,192	30,074	0	0	0
1983	19,146	115,864	14,789	117,901	33,686	0	0	1,323
1984	45,240	81,918	17,912	111,263	31,366	0	0	0
1985	40,610	15,432	16,785	96,120	35,159	0	7,676	0
1986	41,520	17,303	164,410	119,685	40,704	0	0	0
1987	. 41,173	27,055	215,534	149,257	45,936	. 0	. 0	0
1988	88,313	145,993	255,060	188,251	89,232	. 0	. 0	0
1989	119,506	170,429	199,026	159,912	86,987	0	0	0
1990	119,535	168,968	102,510	.143,081	32,632	0	0	0
1991	118,570	200,656	167,399	148,629	48,974	0	0	0
1992	130,380	235,387	192,237	179,285	52,840	0	. 0	0
1993	132,294	190,708	183,155	95,958	21,921	0	0	0
1994	155,474	105,805	127,563	84,502	10,441	0	0	0
1995	152,047	90,714	113,736	44,239.	30,787	: 0	0	0
1996	168,381	58,269	79,505	39,790	22,310	0	0	0
1997	199,662	67,378	123,772	16,780	19,752	0	2,700	0
1998	357,821	68,979	45,855	16,919	18,324	0	122	0
1999	240,164	48,998	0	13,164	16,224	0	0	0

#### 3.0 Waste Characteristics

Waste characteristics for Terminal 2 are described below first for the entire site and then for two buildings: Building 3070 and former Building 3060. Waste characteristics specific to underground storage tanks and electrical equipment are discussed at the end of this section.

#### **Sitewide Waste Characteristics**

To provide the Port with the information necessary to develop environmental management plans for Terminal 2, an Environmental Site Assessment (ESA) was conducted in 1991 [2]. At the time the ESA was performed, the Terminal 2 warehouses were being used to store bulk paper products and lumber. This ESA concluded that the environmental concerns at the facility were centered on the used oil handling conducted near the gearlocker. At that time, the used oil tank was located in an adjacent building (Building 3070) with aboveground piping connecting to the gearlocker. The used oil tank did not have secondary containment and noticeable staining of the asphalt floor was observed. No soil or groundwater sampling was performed as part of the 1991 ESA.

The 1991 ESA also revealed that treated poles were being stored in the yard prior to shipment. It also stated that although treating compounds have very low solubility in water, the possibility did exist that wood preservative chemicals could drain to the river through the storm sewer system [2].

Hahn and Associates were contracted by the Port of Portland to characterize the contents of the steam clean sump located at Terminal 2, identify disposal options, and dispose of the sludge [13]. These activities took place from February 1992 through August 1992. The sample of the sump content was analyzed for PCBs and TPH. The analyses did not detect concentrations of hazardous substances above regulatory levels (see Attachment C).

On December 8, 1992, the Port of Portland requested that Hahn and Associates investigate an observed oil spill at Terminal 2 in the vicinity of Berth 204 [12]. The spill was several hundred square feet in size. The source of the leak was a piece of equipment owned by SSA. The equipment had a hydraulic fluid leak on December 5, 1992. Despite the application of absorbent material by SSA, hydraulic fluid was discharged to the storm water system and into the Willamette River.

In December 1994, Hahn and Associates was contracted to characterize waste material that had been generated during drain clean-out activities at Terminal 2, and to evaluate appropriate treatment or disposal options [14]. Samples were collected from aqueous and solid material in 2 55-gallon drums. The samples were analyzed to determine whether or not the material exhibited hazardous waste characteristics. The aqueous phase of the material was analyzed for the presence of TPH by Method 418.1 and the solid phase of the material was analyzed for PCBs. Based on the analytical data, the aqueous material

was determined to be a non-hazardous waste liquid and the solid material was determined to be a non-hazardous waste solid (see Attachment D).

#### Former Bldg. 3070

Used oil handling practices in the vicinity of former Building 3070 were determined to be inadequate during the 1991 ESA of the area [2]. Oil staining was observed on asphalt and secondary containment of the used oil area was not in place. The Port demolished this building in 1998 and took soil samples in the area brought into question during the 1991 assessment [3]. A soil sample directly below the former used oil area of Building 3070 did not detect any hydrocarbons above the detection limit.

#### Former Bldg. 3060

During the demolition of this building, it was determined that a sub-ground floor boiler room had supplied heat to this building in the past and that underground piping associated with a former heating oil storage tank was located below the building. Demolition of this below ground area and subsequent soil sampling revealed impacts to the soil from this former heating oil system [3]. On February 4, 1998, Hart Crowser collected soil samples from beneath the demolished building at Terminal 2. Sample 1 (S-1) and 2 (S-1) were collected from beneath the basement floor at 0.5 ft and 4.5 ft bgs, respectively. The NWTPH-HCID Method identified diesel and heavy oil in both samples. Diesel and heavy oil were detected in samples S-1 and S-2 at concentrations of 3,530 mg/kg and 4.380 mg/kg, respectively for diesel and 7.820 mg/kg and 11,300 mg/kg, respectively for heavy oil. On February 6, 1998, 108 tons of soil with TPH were excavated and stockpiled at Terminal 2. Further sampling was conducted on the excavation walls and floor. Heavy oil was detected on the bottom sample at a concentration of 7.670 mg/kg. The sample was then analyzed for volatile organic compounds (VOCs) by EPA Method 8260, leachable metals by EPA 1211/6000/7000 Series Methods, and PCBs and pesticides by EPA Method 8081. VOCs, leachable metals, and PCBs and pesticides were not detected in sample. Stockpiled soil was then disposed of at TPS Technologies [3].

On February 9, 1998, the Department of Environmental Quality was notified of this release and placed the site into the leaking underground storage tank program under file number 26-98-0081. For safety and roadway (Front Avenue) stability issues additional impacted soil could not be removed. Geoprobe explorations conducted during April of 1998 revealed impacts to both soil and groundwater. The Port has worked with DEQ's UST program regarding the need for further work at this site and currently has submitted a workplan to DEQ that addresses the outstanding issues at the site. Based on the distance this site is from the Willamette River it is very unlikely that groundwater impacts from this area extend to the Willamette, although the extent of this impact has yet to be precisely determined.

#### Former Underground Storage Tanks

Three underground storage tanks (1,500-gallon used oil, 2,750-gallon diesel, 5,500-gallon gasoline) located south of the gearlocker building were removed in December of 1997

[8]. Soil samples taken below each of the tanks indicated that petroleum hydrocarbons were not present. Diesel was detected in soil beneath the concrete fueling pad. Approximately 15 tons of diesel impacted soil was removed from the fueling area and confirmatory sampling indicated that all soil above DEQ Level 2 soil matrix cleanup levels was removed. DEQ has declared that no further action is necessary at this site.

#### **Electrical Equipment**

As of 1991, six out of seven PCB transformers at Terminal 2 had been removed for disposal. Documents of disposal classified contents of transformers as hazardous waste with PCB content, both liquid and solid. In 1999, the final PCB transformer at Terminal 2 was removed which was also classified as containing PCBs.

# 4.0 Groundwater Pathway

#### 4.1 Hydrogeologic Setting

Terminal 2 is located in the Portland Basin, a northwest-southeast trending basin that is approximately 20 miles wide by 45 miles long [5,6]. This structural basin is filled with consolidated and unconsolidated continental sedimentary rocks. Older rocks that underlie the basin-fill sediments include the Skamania Volcanics; Columbia River Basalt Group; basalts of the Waverly Heights, Goble Volcanics, Pittsburg Bluff, Scappoose, and the Rhododendron Formations. The Sandy River Mudstone and the Troutdale Formation are the oldest of the basin filling-sediments. Large quantities of Pleistocene sediments were deposited during catastrophic floods of the Columbia River. These floods occurred as a result of the periodic failures of ice dams impounding huge lakes in Idaho and Montana. The catastrophic flood deposits can be grouped into two easily discernable lithologic units: a basaltic sand and gravel unit with varied amounts of cobbles and boulders and a finer, stratified, micaceous arkosic sand, silt and clay. The former unit is present near the Columbia River channel in southern Clark County and north Portland. The later unit exists at an altitude of about 250 feet throughout the Portland Basin. Alluvium deposits from the Columbia were deposited on the Pleistocene sediments. The alluvium deposits consist of sand and silt.

Eight major hydrogeologic units form the Portland Basin aquifer system. Proceeding from oldest to youngest, these units include:

- ♦ Older rocks
- ◆ Sand and Gravel Aquifer (SGA)
- ♦ Confining Unit 2 (CU2)
- ◆ Troutdale Sandstone Aquifer (TSA)
- ◆ Confining Unit I (CU 1)
- ♦ Unconsolidated sedimentary rock aquifer
- ◆ Consolidated gravel aquifer
- Undifferentiated fine-grained sediments

Of these, the undifferentiated fine-grained sediments, the consolidated gravel aquifer, and the older rocks are the three hydrogeologic units that are relevant to Terminal 2.

The unconsolidated sedimentary aquifer is the uppermost hydrogeologic unit in the Basin. It consists of catastrophic flood deposits, alluvial deposits along smaller streams in the Basin, flood plain deposits along the Willamette and Columbia Rivers, and glacial outwash in basins in northern Clark County. Aquifer yields in the unconsolidated sedimentary aquifer are variable.

The consolidated gravel aquifer is composed of several geologic formations that consist of cemented conglomerate and sandy conglomerate, as well as local accumulations of lavas and surface soils. The conglomerate portion of the aquifer, referred to as the Troutdale Gravel Aquifer (TGA), extends throughout the Basin. The top of the

consolidated gravel aquifer typically ranges from plus 100 to 200 feet. Near the Willamette and Columbia Rivers, the top of the aquifer is eroded to a depth of approximately minus 200 feet. The TGA is a source of public, industrial, and domestic supply. Most wells in the TGA yield a minimum of 50 gallons per minute (gpm) and can yield up to 1,000 gpm.

The Columbia River Basalt Group and the Rhododendron Formation are the only older rocks in the Portland Basin that have productive aquifers [6]. In the western and southern boundaries of the Portland Basin, the Columbia River Basalt Group is used as an aquifer. Wells completed in the Columbia River Basalt Group are capable of producing over 1,000 gpm. The Rhododendron Formation underlies the extreme southeastern part of the Portland Basin. It is mainly used for domestic and small-scale irrigation. Wells screened in this formation produce 5 to 25 gpm.

Site soil consists of fill (sand) overlying sands and silts. The depth to the Troutdale Formation is unknown. At the nearby Hoyt Street Site, the Sandy River Mudstone and the Columbia River Basalt were not encountered in borings completed at a total depth of 166 bgs [16]. Groundwater is expected to be on the order of 15 to 20 feet below the ground surface [8]. The general direction of groundwater flow is expected to be to the north or northeast toward the Willamette River.

# 4.2 Groundwater Targets

According to a query of the Oregon Department of Water Resources GRID database, there are no onsite water supply wells and four potential offsite water supply wells on the southwest side of the Willamette River within approximately one mile of Terminal 2. The designated use for three of the four wells is industrial. The fourth well does not have a designated use. According to the well record for this well, it was constructed in 1941 to provide groundwater for air conditioning. Thus, within 1 mile of Terminal 2 there are no known groundwater targets.

Terminal 2 is located in Section 28, Township 1 North, Range 1 East. According to a GRID database query for Sections 28, 29, 30, 32, 33 and 34, Township 1 North, Range 1 East, the nearest potential domestic water supply wells are located over one mile from Terminal 2, and are either upgradient or cross gradient from the property. Most of these wells are located southwest of Terminal 2 in the Tualatin Mountains.

#### 4.3 Groundwater Conclusions

Possible groundwater impacts exist near the former Building 3060 and the extent of those impacts has not been determined. Although it is unlikely based on data obtained to date that groundwater has impacted sediments in the Willamette from this site, additional investigation is planned to determine the extent of the contamination.

Terminal 2 is located adjacent to the Willamette River and the local groundwater gradient is toward the river. There are no groundwater wells on the facility or downgradient from the facility.

Groundwater in the vicinity of the site is not used for drinking water. City water is available to the area.

# 5.0 Surface Water Pathway

#### 5.1 Hydrologic Setting

One side of Terminal 2 borders the Willamette River. There are no other surface water bodies on or immediately adjacent to the Terminal 2.

Based on streamflow measurements made by the United States Geological Survey (USGS) at their Portland gauging station, located at river mile 12, approximately 3 miles upstream of Terminal 1, the average annual discharge for the Willamette River is 33,000 cubic feet per second. Streamflow exceeds 100,000 cubic feet per second approximately 5 percent of the time.

River elevations in the Portland Harbor fluctuate on a daily basis in response to tidal fluctuations in the Columbia River. These tidal fluctuations result in a reversal of water movement in the lower portion of the Portland Harbor. During times of medium to low flow in the Willamette River, tidal effects extend upstream of Terminal 2.

The land surface at Terminal 2 is either paved with asphalt or concrete or covered with buildings. Storm water is diverted to and captured by a series of catch basins connected to outfalls that discharge to the Willamette River (see Attachment A).

The site is generally flat at an average elevation of about 40 feet above mean sea level (MSL). The Willamette River borders the site to the east. The river water elevation is typically less than 10 feet above MSL and is subject to a mean tidal range of about 2 feet. The majority of the site is not within the 100 year flood plain (some of the margins along the river fall within the 100 year flood plain).

Since 1980, maintenance dredging has occurred at Terminal 2 on eleven occasions. Table 2 summarizes the berth that was dredged, the year it was dredged, volume of dredged material, and disposal site.

Table 2. Terminal 2 Maintenance Dredging Projects

Berth	Year Dredged	Volume Dredged	Disposal Site
		(cubic yards)	
205, 206	1980	30,000	Swan Island Lagoon
205, 206	1983	11,000	Swan Island Lagoon
205, 206	1984	4,500	Swan Island Lagoon
203, 204, 205	1985	237,000	Swan Island Lagoon
Area just offshore of	1985	1,285,000	Borrow fill for T2
203, 204, 205			upland
205, 206	1988	7,500	Morgan Bar
204, 205, 206	1990	13,000	Morgan Bar
204 – 206	1993	22,000	Morgan Bar
203	1994	1,400	Morgan Bar
204 – 206	1995	18,000	Ross Island Lagoon
204 – 206	1996	22,000	Morgan Bar

# 5.2 Surface Water Targets

The lower Willamette River is currently not used as a source of drinking water. However, both recreational and subsistence fishing occur within the lower Willamette River. Commercial fishing is limited to a small Pacific lamprey fishery. Recreational boating, water skiing, swimming, and beach use occur within the Harbor.

According to the Portland Harbor Sediment Management Plan [15], potential environmental receptors for the Willamette River include the benthic community, fish, birds, and mammals.

There is currently a lack of information on the nature and extent of benthic communities in and near the Portland Harbor [15].

The lower Willamette River provides habitat for 39 fish species, including populations of wild cutthroat trout, rainbow trout, and mountain whitefish. White sturgeon are plentiful within the Harbor. The Harbor is also an important migratory corridor, nursery habitat, and adult foraging area for two runs of Chinook salmon, two runs of steelhead trout, and individual runs of Coho and sockeye salmon.

Species that have been selected by regulatory agencies for special protection and/or consideration were identified by contacting the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and the Oregon Natural Heritage Program (ONHP). The following species are Federally listed as threatened pursuant to the Endangered Species Act:

 Steelhead trout (Oncorhyncus mykiss), Lower Columbia River Evolutionary Significant Unit (ESU); and

• Chinook Salmon (Onchohyncus Tshawytscha), Lower Columbia River ESU.

In addition, coastal cutthroat trout (Oncorhynuc clarki clarki) are proposed as threatened for the Southwest Washington/Columbia River ESU.

Upper Willamette River populations of steelhead, Spring Chinook, Coho salmon, and sea-run cutthroat which migrate through the Harbor, are listed, proposed for listing, or considered candidates for listing as threatened species under the Federal Endangered Species Act. The Pacific lamprey is considered a federal species of special concern.

Great Blue Herons, cormorants, osprey, mergansers, kingfishers, peregrine falcons, and bald eagles routinely forage within the Harbor. The area is also part of the wintering range for the Aleutian Canada goose. All are protected under the Migratory Bird Treaty Act. The peregrine falcon is federally listed as an endangered species, while the Aleutian Canada goose is federally listed as threatened species. The bald eagle also is a threatened species, but was recently proposed to be removed from this list.

The lower Willamette River is water quality limited for the following toxic compounds:

- Dioxins/furans (water column and sediments)
- Mercury (fish tissue)
- Pesticides (water column and sediments)
- Polynuclear Aromatic Hydrocarbons PAHs (water column and sediments)
- Trace metals (water column and sediments)

The nearest significant wetland is located along the west bank of the Willamette River, near the mouth of Multnomah Channel, about seven miles downstream from Terminal 2.

#### 5.3 Surface Water Conclusions

The available site information indicates that there is a low potential for historic or current activities and operations at Terminal 2 to impact surface water and sediments. Historically, the cargo handled at Terminal 2 has largely consisted of lumber, plywood, pulp, steel, logs and containers. Limited quantities of bulk mineral products have been handled at the terminal. Thus, given the types of cargo historically handled at Terminal 2, there is a low potential for releases or spills of hazardous substances due to over-water activities.

There is also a low potential for upland activities to have resulted in releases to the Willamette River via stormwater discharges. Based on the ESA performed in 1991, no environmental concerns were identified except for used oil handling inside the gearlocker and associated buildings. As was discussed in the Site Description section, the upland areas at Terminal 2 have historically been covered with paved areas or buildings. Stormwater is collected in a series of catch basins that discharge to the Willamette River through two outfalls (see Attachment A).

Finally, there is a low potential for releases to surface water and sediments via subsurface migration of hazardous substances. The USTs at the site have been removed without any apparent impact to groundwater. Residual petroleum products are present in soil and groundwater near former Building 3060. However, as will be discussed below, there is no evidence that significant concentrations of petroleum products have migrated from this area to the river based on past sediment sampling results.

Sediment samples were collected at six locations at Terminal 2 as part the 1990 Rose Festival dredging. No constituents were detected above their respective LCRMA Screening Levels. The six samples taken during for the 1990 Rose Festival dredging project ranged in TPH concentration from 69 mg/kg to 130 mg/kg per EPA 418.1. Total metals were also analyzed. Results for cadmium ranged from 0.4 to 0.5 mg/kg, chromium from 9.1 to 11 mg/kg, copper from 17 to 19 mg/kg, lead from 1.7 to 4.2 mg/kg, mercury from 0.06 to 0.13 mg/kg, silver was non detectable, and zinc from 31 to 43 mg/kg. No PAHs, pesticides, and PCBs were detected in samples 1800s and 1800b. Attachment E contains the analytical results for the 1990 sediment samples.

In 1993, three surface grab sediment samples were collected at Terminal 2 as a part of the permit requirements for dredging at Berths 204-206. The samples were analyzed for metals, organochlorine pesticides and PCBs, VOCs, phthalates, PAHs, phenols, and organotins. None of the constituents were found to be present above their respective LCRMA Screening Levels. Organotins and VOCs were not detected in sample T2#1,2,3 Composite. Phenols were also not detected in sample T2#1,2,3 Composite, except for 3and 4-methlyphenol, which was present at a concentration of 52 ug/kg. Analysis for phthalates and PAHs resulted in 11 out of the 23 compounds being detected: phenanthrene (45 ug/kg), fluoranthene (120 ug/kg), pyrene (120 ug/kg), benz(a)anthracene (55 ug/kg), chrysene (63 ug/kg), butylbenzyl phthalate (21 ug/kg), benzo(b+k)fluoranthene (110 ug/kg), benzo(a)pyrene (42 ug/kg), benzo(g,h,i)perylene (32 ug/kg), and bis(2-ethylhexhyl) phthalate (370 ug/kg). The concentrations of organochlorine pesticides and PCBs in sample T2#1,2,3 Composite were either nondetectable or <0.004 mg/kg. Total metal concentrations were as follows: antimony (0.08 mg/kg), arsenic (2.7 mg/kg), cadmium (0.17 mg/kg), chromium (19 mg/kg), copper (41 mg/kg), lead (19.5 mg/kg), mercury (0.06 mg/kg), nickel (16.2 mg/kg), silver (0.04 mg/kg), and zinc (99 mg/kg). Attachment F contains the analytical results for the 1993 sediment samples.

In 1996, the Port sampled sediments at Terminal 2 to assess the quality of dredge prisms. Core samples were collected at six locations: HC-GC-03 through HC-GC-08. Two samples were collected at each of the three berths: Berths 204, 205 and 206. Core depths ranged from 2 to 4 feet. The two samples collected at each berth were composited to create three samples for laboratory analysis: HC-T2-01, HC-T2-02 and HC-T2-03. The samples were analyzed for metals, butyltins, pesticides, PCBs, PAHs and phenols. All of the constituents detected in the samples were below LCRMA Screening Levels and the sediments were determined to be suitable for unconfined, open-water disposal. These samples were collected as part of the 1997 maintenance dredging performed at Terminal 2 [11]. Attachment G contains a report that documents the analytical results.

To assess sediments for proper disposal (maintenance dredging), sediments at Berths 203, 204, 205, and 206 were again sampled in 1998 [9]. Sediment samples were collected from 0 to 3 feet. There were two Dredged Material Management Units (DMMUs) proposed for this dredging project. DMMU T2/1 (composite sample B204-C1) represented material along Berths 204-206 and was characterized by three sediment cores. DMMU T2/2 (composite sample B203-C1) represented material along Berth 203 and was characterized by two sediment cores. The analytical results were compared against the LCRMA SLs and Maximum Levels (MLs). Tier II testing found that all detected compounds and associated sample quantitation limits were below their corresponding LCRMA SLs and that this dredged material is suitable for unconfined, open-water disposal. Tier III Biological Testing was not required but was conducted to validate the LCRMA SLs. Neither of the two test sediments failed any of the LCRMA "one-hit" criteria and, while the results of the midge acute bioassay were determined to be statistically different from the reference sediment for both test sediments, the test sediments were determined to have "passed" LCRMA Biological Testing Interpretive Criteria. Attachment H contains a report documenting these sediment testing results.

SSA, the facility operator at this site, has an NPDES permit through the Department of Environmental Quality. The compliance record of this permit could be obtained through DEQ Water Quality records. The standard facility operations conducted at this site would not imply that impacts to surface waters have occurred. In 1991, the Port of Portland forwarded the responsibility of the industrial wastewater discharge permit at Terminal 2 (Permit # 400-004) to Stevedoring Services of America (SSA). SSA is responsible for record retention, monitoring, and reporting regarding the industrial wastewater discharge permit. SSA must also implement an Accidental Spill Prevention Plan. The Port forwarded the Municipal Pretreatment Wastewater Discharge Permit for Terminal 2 to SSA on September 1, 1991.

# 6.0 Air Pathway

# 6.1 Physical Conditions

The area has a temperate marine climate characterized by wet winters and dry summers. Temperature, and wind data for the area are summarized below.

# Temperature [4, 5, 7]

Average Annual 54°F

Coldest Month January (Average 40°F)
Warmest Month August (Average 69°F)
Lowest Recorded -2°F (January 1888)

Highest Recorded 107°F (July 1942)

#### Wind [4]

Minimum Monthly Mean (October): 6 mph Maximum Monthly Mean (Dec./Jan.): 10 mph

Maximum Recorded: 88 mph (1962)

Direction: Generally from west, but east winds are common

In the vicinity of Terminal 2, the uppermost unit is fill material, typically sand or silty sand although the entire area that encompasses Terminal 2 is paved with asphalt.

#### 6.2 Air Pathway Targets

Terminal 2 is located in the Portland Harbor area of the Willamette River and lies within land zoned for industrial use. The areas surrounding Terminal 2 are occupied by marine, industrial, and commercial operations. A residential zone is located greater than ½ mile southwest of the site.

#### 6.3 Air Pathway Conclusions

There is no information indicating a release to air has occurred nor would one be likely from the operations or the petroleum impacts to soil that have been documented. Sampling results indicate that soils contain diesel and heavy oil near former Building 3060. Therefore, there is limited potential for volatile emissions. Fugitive dust emissions are controlled by the presence of asphalt and concrete pavement and existing buildings.

# 7.0 Direct Contact Pathway

# 7.1 Physical Conditions

Terminal 2 is located along the left descending bank of the Willamette River. The entire facility is fenced, limiting entry by the general public.

The entire site is either paved with asphalt or concrete or covered by buildings thus limiting the potential for direct contact.

# 7.2 Direct Contact Targets

Terminal 2 is located in the Portland Harbor area of the Willamette River on land zoned for industrial use. The areas surrounding Terminal 2 are occupied by marine, industrial, and commercial operations. A residential zone is located greater than ½ mile southwest of the site.

#### 7.3 Direct Contact Conclusions

Current information indicates diesel and heavy-oil range hydrocarbons are present in soil and potentially groundwater in one area. The surface soil in this area is covered with asphalt paving thus limiting potential for direct contact.

Direct contact with surface soil by terrestrial receptors is unlikely because of pavement and the lack of attractive habitat in this industrial area. Direct contact for the general public is prevented by restricted access and for current operators and visitors by the paved surface.

# 8.0 Summary and Conclusions

Possible groundwater impacts exist near the former Building 3060. It is unlikely based on data obtained to date that subsurface migration from the former Building 3060 area has impacted sediments in the Willamette River. No further investigation with respect to sediments is recommended for Terminal 2. Additional investigation in the former Building 3060 area is recommended, however, to further delineate the extent of petroleum hydrocarbons in groundwater.

Sediment samples have been obtained from Terminal 2 prior to maintenance dredging. All the sediment samples indicated that dredged materials were suitable for unconfined open water disposal. In addition, past sampling of sediments supports the low potential for surface water and sediment impacts from historic or current activities and operations at Terminal 2, including over-water activities, stormwater discharges or subsurface contaminant migration.

Direct and air pathway contact at this site is very unlikely due to the fact that the entire site is either paved with concrete or asphalt or is covered by buildings. Any areas of known contamination are due to heavy petroleum hydrocarbons, which are not readily volatile, and the areas are covered with asphalt.

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# Terminal 2 Preliminary Assessment Appendix II

Port of Portland

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#### DEFENSE PLANT CORPORATION 811 Vermont Avenue, N.W. Washington 25, D.C.

#### GENERAL DATA - Plancors 50 and 772

Portland, Oregon. LOCATION ....

Land, buildings, machinery and equipment. Project designed for construction, outfitting and

The three shipways have a capacity of approximately 1,400 tons of small craft and about 2,100

tons of larger vessels per month.

Plancor 50. Consists of four parcels, totalling about 37 acres, of which one parcel, 3.17 acres, is LAND.....

owned; other parcels are lessee-owned or leased.

Plancor 772. Two tracts. One, about 12½ acres, is owned; the other (terminal site) about

201/3 acres is leased.

BUILDINGS.

Plancor 50. Total of 18 buildings, approximately 267,000 sq. ft. total floor area.

Administration Building. Wood frame construction on concrete foundations. Area 26,000 sq. ft.

STRUCTURES. Clearance 8 ft. 6 in. Fluorescent lighting. Sprinklered.

> Main Industrial Building. Two story and mezzanine. Total area 81,600 sq. ft. Clearances 18 ft. first floor, 8 ft. 6 in. mezzanine, 9 ft. 6 in. second floor. Concrete foundations and columns,

trusses and siding. Sprinklered.

Other buildings are as follows:

Paint Shop, 1,620 sq. ft. area. Clearance 10 ft.

Air Compressor, 4,600 sq. ft. area. Clearance 18 ft.

Dispensary, 2,100 sq. ft. area. Clearance 10 ft.

Time Gate, 2,250 sq. ft. area. Clearance 8 ft.

Coopersmith, 6,475 sq. ft. area. Clearance 15 ft.

Outfitting, 28,000 sq. ft. area. Clearance 16 ft. 9 in.

Material Office, 480 sq. ft. area. Clearance 10 ft.

Machine Shop, 7,000 sq. ft. area. Clearance 18 ft.

Pickling, 225 sq. ft. area. Clearance 8 ft.

Time Gate, two story. Total area 1,800 sq. ft.

Sheet Metal Shed, 6,000 sq. ft. area. Clearance 10 ft.

Water Tower.

Engineering, 33,600 sq. ft. area. Clearance 10 ft. 6 in.

Utility No. 1, 24,000 sq. ft. area. Clearance 12 ft. 6 in.

Utility Building (Construction of Building on Plancor 50). Two story. Total area

16.800 sq. ft.Clearances 11 ft. 6 in.

Angle Furnace, 12,500 sq. ft. area. Clearance 24 ft.

Utility No. 2, 15,600 sq. ft. area. Clearance 12 ft. 6 in.

Cable Storage, 10,000 sq. ft. area. Clearance 14 ft.

Testing Laboratory, 225 sq. ft. area. Clearance 10 ft.

Welding School. One story. Area 5,600 sq. ft.

Pipe Shop, 4,800 sq. ft. area. Clearance 16 ft.

Boat Houses (2). Timber frame on log floats.

Construction is wood frame on concrete foundations, with wood or galvanized iron

Shipways. Three shipways and four attendant craneways. Shipways No. 1 and No. 2 are 85 ft. wide x 680 ft. long. Shipway No. 3 is 97 ft. wide x 720 ft. long. Timber frame construction on timber piling.

Outfitting Dock. 125 ft. wide x 920 ft. long. Timber deck on timber piling (about one-half length is on Lessee property).

Dock No. 4. 80 ft. wide x 325 ft. long on the harbor-line, also 50 ft. wide x 550 ft. long

along a ship basin at right angles to harbor line.

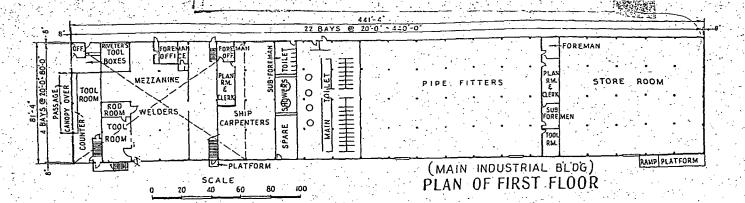
Miscellaneous. One 100,000-gallon elevated steel water tank.

Plancor 772. Five buildings. Wood frame construction. Total area 27,400 sq. ft. Pier A. 50 ft. wide x 550 ft. long. Carries gantry track on which operates a 45-ton crane.

Pier B. 85 ft. wide x 450 ft. long. Gantry track on which operates a 20-ton crane.

Docks 1, 2 and 3. All 720 ft. long. Widths from 80 to 110 ft.

Terminal Building. Leased. Two-story frame warehouse. Area 300,000 sq. ft.



MACHINERY AND

TION.....

Machine Tools. 79 items, including Boring Machines, Drill Presses, Grinders, Lathes, etc.

Metal Forming Tools. 42 items, including Presses. Pipe Machines, Shears, etc.

Other Production Equipment. 214 items, including Air Compressors, Bending Slabs, Scales, EOUIPMENT

Power Saws, Steam Hammers, Motors, Hoists, Generators, etc. Also 16 Cranes as follows: six 5-ton automotive, two 25-ton and one 30-ton locomotive, one

 $\frac{1}{2}$ -ton, five 20-ton gantry, one 4-ton.

Furniture and Fixtures. About 2,500 items of office equipment and office machines.

Portable Tools. About 800 items, including Welding Machines (651), Cutting Machines,

Planograph, etc.

UTILITIES .... Water. Furnished by City.

Sewers. Connect to City system.

Power and Light. Furnished by Portland General Electric Co.

Primary Circuit 11,000 volts, 3 phase, 60 cycles. Gas. Furnished by Portland Gas and Coke Co.

Adequate toilet facilities for male and female employees. PLUMBING ...

Main Industrial Building has gas furnace and gas unit heaters. HEATING ....

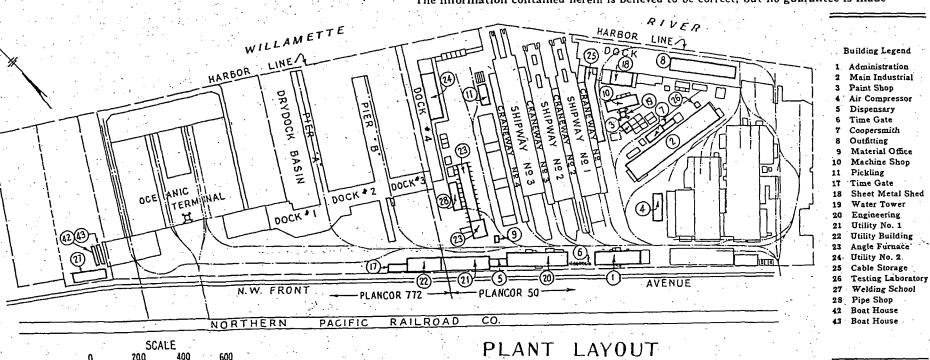
Administration Building, oil-fired furnace supplies steam for heating.

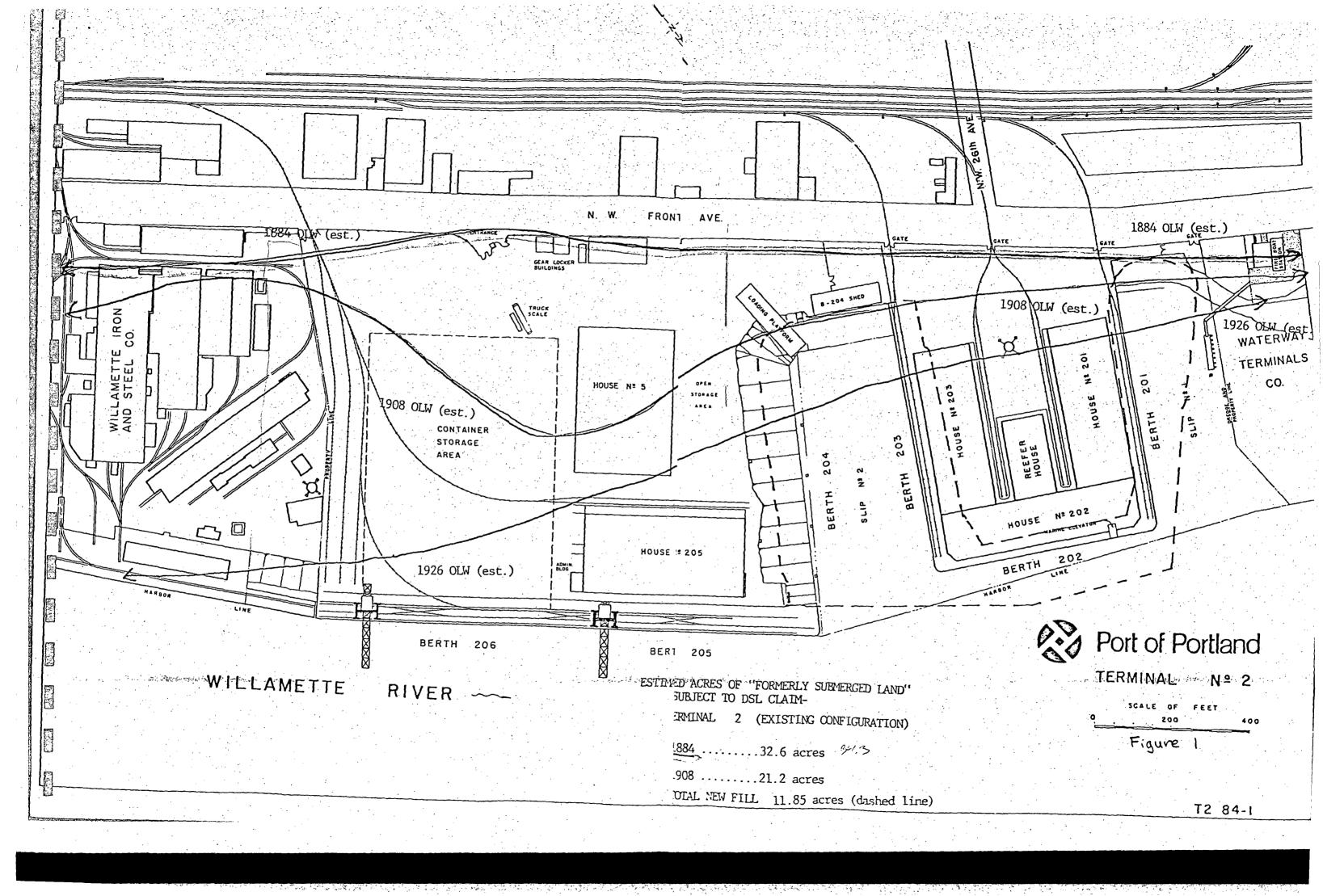
Railroad. Northern Pacific Railroad serves plant. TRANSPORTA-

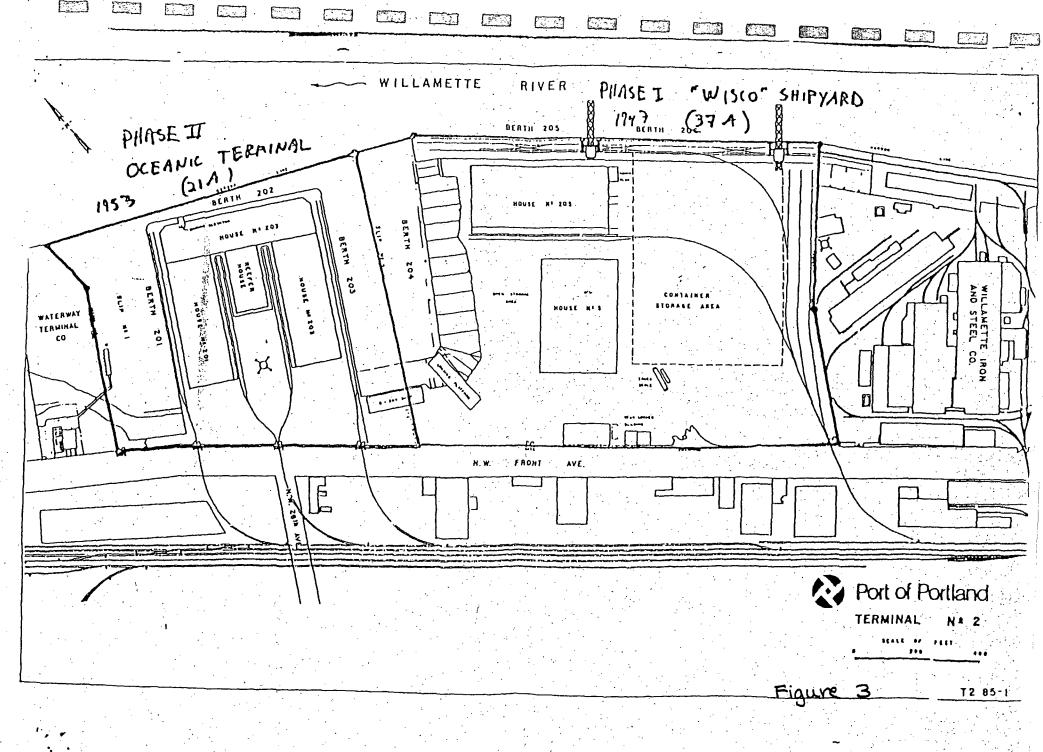
Water. Dock space for ocean shipping on site.

Highways. Four-lane arterial street adjacent to site. Airport. Portland Municipal Airport five miles away.

The information contained herein is believed to be correct, but no guarantee is made







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